

CLAIMS

1. A method for purifying carbon nanotubes, the method comprising:

immersing carbon nanotubes into a solution in which a
5 template compound consisting of a plurality of receptor
regions each including a conjugated ring structure and a
spacer region that fixes the receptor regions is dissolved,
and extracting specific carbon nanotubes into the solution;
and

10 recovering the extracted carbon nanotubes.

2. The method according to claim 1, further comprising:

immersing the carbon nanotubes into the solution in
which the template compound including an oleophilic

15 substituent in at least one of each of the receptor regions
and the spacer region is dissolved, and extracting the
specific carbon nanotubes into the solution; and

recovering the extracted carbon nanotubes.

20 3. The method according to claim 1 or 2, wherein
the extracting includes performing ultrasonic irradiation.

4. The method according to any one of claims 1 to 3,
wherein the recovering includes centrifuging.

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5. The method according to any one of claims 1 to 4,

wherein the extracting includes using tetrahydrofuran as a solvent.

6. The method according to any one of claims 1 to 5,
5 wherein each of the receptor regions includes a porphyrin or pyrene skeleton.

7. The method according to claim 6, wherein metal
elements are coordinated on the porphyrin skeleton.
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8. A carbon nanotube, wherein metal elements that can be
coordinated on a porphyrin skeleton is carried on a surface.

9. The carbon nanotube obtained by the purifying method
15 according to claim 1 or 2.

10. A carbon nanotube, wherein
a half width of a peak appearing near a spectrum of
200 cm^{-1} obtained by a Raman scattering measurement is
20 equal to or smaller than 20 cm^{-1} .